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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,102	01/02/2002	Jian Chen	50767/P037US/10112692	6480
27683	7590	07/16/2004	EXAMINER	
HAYNES AND BOONE, LLP 901 MAIN STREET, SUITE 3100 DALLAS, TX 75202			NGUYEN, HA T	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/038,102

Applicant(s)

CHEN ET AL.

Examiner

Ha T. Nguyen

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-74 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 and 46-74 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4-15-2, 5-12-3</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Applicant's election with traverse of Group II, claims 9-45 in Paper filed 5-24-4 is acknowledged. The traversal is on the ground(s) that there is no serious burden on the Examiner. This is not found persuasive because even though there is an overlapping in the searched fields, each invention requires separate and additional search focusing on the specificity of the claimed invention.

The requirement is still deemed proper and is therefore made FINAL.

#### ***Claim Objections***

2. Claims 9-25 and 28 are objected to because of the following informalities: In claim 9, line 9, substitution of "and" with --from-- , and in claim 28, line 3, deletion of "portion" are suggested for correctness. Appropriate correction is required.

Claims 10-25 variously depend from claim 9, they are objected to for the same reason.

#### ***Claim Rejections - 35 USC § 112***

3. Claims 9-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9 and 26 recite many limitations, which have insufficient antecedent basis in the claims, for example "The method" in lines 1 of both claims, "said opening" in line 5 of claim 9; and in claim 14, lines 1-2, "said channel side walls". Appropriate correction is required to correct all lacking of antecedent basis in the claims.

Claims 10-25 and 27-45 variously depend from claim 9 or 26, they are rejected for the same reason.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

Art Unit: 2812

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103<sup>®</sup> and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 9-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messer et al.'s article "Microchannel Networks for Nanowire Patterning" ("Messer") in view of Enoch et al.'s article "Micromolding in Capillaries: Applications in Materials Science" (hereinafter "Enoch").

Referring to Fig. 3 and related text, Enoch discloses [Re claims 9 and 26] a method of selectively isolating a plurality of nanotubes, said method comprising the steps of: placing a mold having a channel on a surface; providing a solution in the channel; drying said solution, and after said drying step, separating said mold and said surface such that nanotubes are deposited across said channel (see pages 10232). But it fails to disclose expressly the details about how the molding is done. However, the missing limitation is well known in the art because Enoch discloses these features (See Fig. 1 and Introduction). A person of ordinary skill is motivated to modify Messer with Enoch to obtain micromolded structures of good quality.

[Re claims 10, 27, and 28] Enoch discloses wherein said mold has a plurality of channels and wherein said surface covers all of said channels; wherein said suspended nanotubes are the ones long enough and positioned such that they extend across said channel while in said suspension; and wherein said channel is open along its longitudinal axis, said method further including the step of placing a temporary seal across said open channel portion. (see Fig. 1);

[Re claims 11 and 33] wherein said channel has positioned therein contours which effect the length of said nanotubes (see Fig. 3c);

[Re claims 13, 30, and 35 ] wherein at least one of said contours include indentions in a side wall of said channel; and wherein said channel sides are varied in width (see Fig. 3b); and

[Re claims 14 and 36] wherein at least one portion of one of channel side walls has a different solvent affinity (see p. 5727, left col.) ;

[Re claims 19 and 41 ] wherein the surface is silicon (see p. 5724, left col.); and

[Re claims 21-22 and 43-44] wherein said drying step occurs at room temperature; said room temperature is changed within domestic limits (see p. 5729, right col.), the examiner interpreted that there is a small fluctuation in normal room temperature .

[Re claims 23-24 and 45 ] further including the steps of: bringing said mold with said nanotubes created across a channel thereof into close proximity to a second surface; and transferring at least some of said nanotubes from said mold to said second surface; wherein said mold has a contour to allow selected nanotubes deposited thereon to be transferred to selected locations on said second surface (see Introduction);

[Re claim 25] wherein said allowing step includes the step of allowing laminar flow of materials to control the length of each said deposited nanotube in said channel (see p. 5729, left col.)

[Re claim 29] further including the step of: after said drying step removing said temporary seal (see Fig. 1); and

[Re claim 32] wherein said placing step includes the step of flowing within said channel at least one material other than said nanotube suspension (see p. 5723, left col.).

[Re claims 15 and 37 ] Messer also discloses wherein said deposited nanotubes are substantially parallel to each other (see Fig. 1a);

[Re claims 18 and 40 ] wherein the mold is a PDMS micromold (see p. 10232, right col.).

[Re claims 20 and 42 ] wherein said allowing step includes capillary action (see p. 10232, right col.).

[Re claims 16, 17, 38, and 39] The combined teaching of Messer and Enoch fails to disclose wherein said deposited nanotubes are substantially all of the same length and wherein the length of each nanotube is a function of the geometry of the channel at the point in the channel that said nanotube is deposited. However this would be inherent when the channel does

Art Unit: 2812

not have uniform width because when the suspension flows in the channel, nanotube having length longer than the width at a specific location would be prevented to move.

[Re claims 12 and 34] The combined teaching of Messer and Enoch fails to disclose wherein at least one of said contours includes a tapered channel. However it would have been obvious to do so for ease of removal of the molded structure.

[Re claim 31] The combined teaching of Messer and Enoch fails to disclose wherein said channel has a depth that is controlled. However it would have been obvious to do so to obtain structure of controlled dimension.

### *Conclusion*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha Nguyen whose telephone number is (571) 272-1678. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM, except the first Friday of each bi-week. The telephone number for Wednesday is (703) 560-0528.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Neibling, can be reached on (571) 272-1679. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Ha Nguyen  
Primary Examiner  
07-10 - 04